

# Novel Photonic RF Spectrometer, Phase I

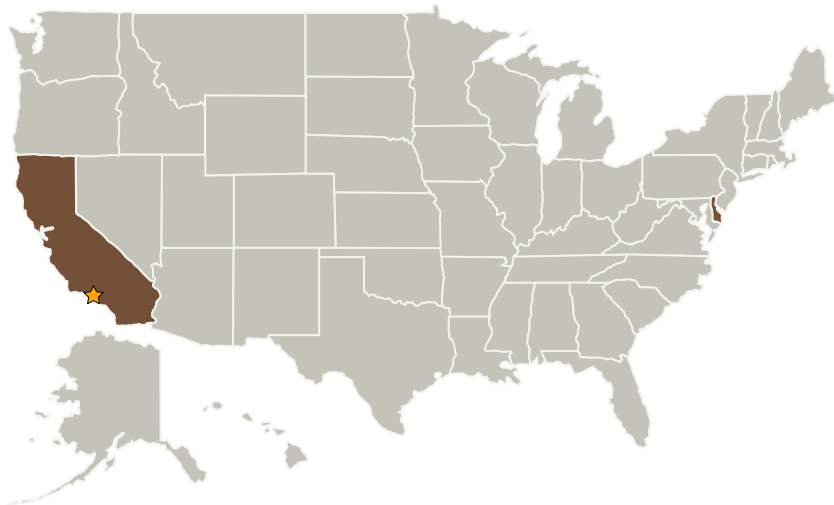
Completed Technology Project (2009 - 2009)



## Project Introduction

Leveraging on recent breakthroughs in broadband photonic devices and components for RF and microwave applications, SML proposes a new type of broadband microwave spectrometer with performance and affordability that were not attainable before. The photonic microwave spectrometer overcomes the constraints associated with microwave electronics, linearly and simultaneously offering 6-18 GHz (potentially up to 100 GHz) bandwidth, high resolution of sub-hundred MHz, and huge numbers of channels (hundreds to 1024 channels). The devices and components used in the proposed novel spectrometer are commercial off-the-shelf. Our miniature low cost design is well suited for the spectrum monitor and sensor requirement for a wide range of NASA, military and commercial applications. Our unconventional flight qualifiable approach eliminates the need for frequency down-converter, moving components, local oscillator, and has intrinsically temperature independent operation. In Phase I, SML will test an evaluation prototype to demonstrate the proposed novel RF/microwave spectrometer based on high performance components and build a system model to simulate and verify spectrometer's design and performance.

## Primary U.S. Work Locations and Key Partners



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## Table of Contents

Project Introduction	1
Primary U.S. Work Locations and Key Partners	1
Organizational Responsibility	1
Project Management	2
Technology Areas	2

## Organizational Responsibility

### Responsible Mission Directorate:

Space Technology Mission Directorate (STMD)

### Lead Center / Facility:

Jet Propulsion Laboratory (JPL)

### Responsible Program:

Small Business Innovation Research/Small Business Tech Transfer



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Organizations Performing Work	Role	Type	Location
★ Jet Propulsion Laboratory (JPL)	Lead Organization	NASA Center	Pasadena, California
Spectrum Magnetics, LLC	Supporting Organization	Industry Minority-Owned Business, Women-Owned Small Business (WOSB)	Newark, Delaware

## Primary U.S. Work Locations

California	Delaware
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## Project Management

**Program Director:**

Jason L Kessler

**Program Manager:**

Carlos Torrez

## Technology Areas

**Primary:**

- TX08 Sensors and Instruments
  - └ TX08.1 Remote Sensing Instruments/Sensors
    - └ TX08.1.1 Detectors and Focal Planes